OBJECTIVE: Pain caused by intracardiac shock discharge of an implanted cardioverter defibrillator (ICD) is an important clinical issue in the treatment of ICD patients. The present study aimed to examine whether the strength of perceived shock pain is influenced by affective and psychophysiologic parameters.

METHODS: Among 204 ICD patients drawn from the German Heart Center Munich, 95 patients (46.6%) experienced > or =1 shock discharge. Pain perception (PPC) was measured by a visual analog scale ranged from 0 to 100 points. Standard instruments were administered to measure psychological distress. A startle paradigm was assessed to measure psychophysiologic arousal with skin conductance responses (SCR) and electromyogram responses (EMG) as dependant variables. Classification and regression tree (CART) analysis was applied to assess the effects of psychodiagnostic and psychophysiologic parameters on pain perception.

RESULTS: Mean ICD shock PPC was 53.7 points (SD 31.6), with a median of 59.0 points (interquartile range 30-80). Pain intensity was highly associated with shock discomfort (p<0.01) and an anxiety score >7 (Symptom Checklist-90) expressed the highest mean PPC (74.8 points; 95% CI, 60.5-89.2). Without heightened anxiety, an increased EMG amplitude and impaired EMG habituation yielded a mean PPC of 71.2 (95% CI, 61.6-80.9).
CONCLUSIONS: Augmented PPC of ICD shocks is predominantly associated with the number of perceived shocks, postshock anxiety, and accompanied by heightened levels of EMG magnitude and impaired EMG habituation, which points to sensitization of central neural structures.